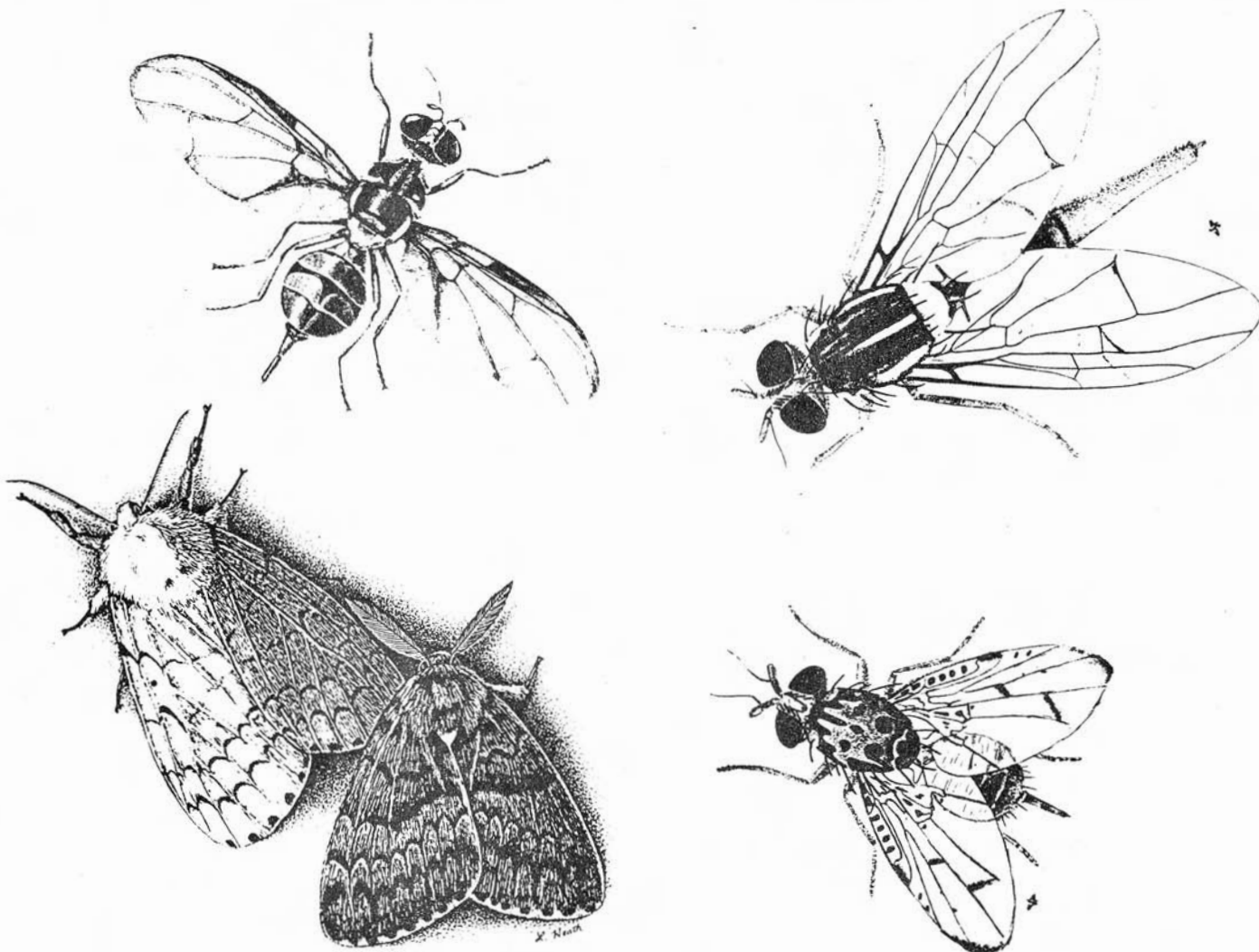


CALIFORNIA PLANT PEST and DISEASE REPORT

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June - August, 1989

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California Department of Food and Agriculture 1220 N Street, Sacramento, California 94271-0001



CALIFORNIA INUNDATED BY EXOTIC PESTS - Large numbers of these four serious pests, Mediterranean fruit fly, Mexican fruit fly, Oriental fruit fly, and gypsy moth, have been trapped this summer, and several eradication programs are under way. See individual accounts in Entomology Highlights.

Correspondence should be addressed to the editorial staff of the California Plant Pest and Disease Report (see address below).

California Plant Pest and Disease Report

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The editor acknowledges the contributions of numerous individuals within the department, without whose cooperation and assistance this project would not be possible.

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The California Plant Pest and Disease Report, Volume 8, Numbers 3-4, was issued on November 15, 1989.

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Entomology Highlights

NAME CHANGES

The Entomological Society of America (ESA) made several additions and changes to the list of Common Names of Insects and Related Organisms. The following common names of California insects were adopted by the society in 1989:

bird cherry-oat aphid
Rhopalosiphum padi (Linnaeus)
Homoptera: Aphididae

creosotebush spider mite
Pseudobryobia drummondi (Ewing)
Acari: Tetranychidae

eucalyptus longhorned borer
Phoracantha semipunctata (Fabricius)
Coleoptera: Cerambycidae

German yellowjacket
Paravespula germanica (Linnaeus)
Hymenoptera: Vespidae

Russian wheat aphid
Diuraphis noxia (Mordvilko)
Homoptera: Aphididae

In the August-October 1986 issue of the CPPDR [5(5):264], the German yellowjacket, *Paravespula germanica*, was originally referred to as the European hornet, *Vespula germanica*, having been found for the first time in California at Berkeley, Alameda County.

ERRATA

On page 25 in the January-May 1989 issue of the CPPDR, the comments for *Acizzia acaciae-baileyanae* and *A. uncatoides* are switched. The species *A. uncatoides* was introduced from Australia in 1954, and the species *A. acaciae-baileyanae* was introduced from Australia in 1987 [CPPDR 6(1-20):6-7].

SIGNIFICANT FINDS

MEDITERRANEAN FRUIT FLY, *Ceratitis capitata* -(A)- A serious condition regarding Mediterranean fruit fly (Medfly) presently exists in California. Wild flies have been trapped in the greater Los Angeles basin through the end of September. Two infestations have been found

in the state during this period and are currently undergoing eradication. The following reports by John Pozzi outline the various finds of this serious fruit pest through September 1; finds after that date will be included in the next issue.

Los Angeles

- A male Medfly was trapped July 20, 1989, in Los Angeles. The Medfly was found in a Jackson/trimedlure trap placed in a peach tree on Morton Avenue. Los Angeles County Department of Agriculture trapper Pablo Busatto is credited with finding the fly.

Jackson/trimedlure trap density in the area was five traps per square mile. Jackson/trimedlure and McPhail trap densities will be increased as required in an 81-square-mile area to meet minimum protocol densities for new Medfly trap finds.

CDFA Insect Biosystematist Eric Fisher determined that the male Medfly was sexually mature.

- On August 2, 1989, an unmated female Medfly was trapped in the Silver Lake area of Los Angeles. The Medfly was found in a McPhail trap placed in a lemon tree on Descanso Drive. The find site is approximately 1.5 miles west of a Medfly trapped July 20, on Morton Avenue. Los Angeles County Department of Agriculture trapper Steve Bennett is credited with finding the Medfly. CDFA Insect Biosystematist Karen Corwin determined that the female Medfly was unmated but contained mature eggs.
- A male Medfly was trapped August 6, 1989, in the Elysian Park area of Los Angeles. The Medfly was found in a Jackson/trimedlure trap placed in a lemon tree on Sargent Place. The find site is a few blocks south from a Medfly trapped August 2 on Descanso Drive in Silver Lake. CDFA Inspector Rogelio Carranza is credited with finding the Medfly.
- On August 8, 1989, 34 Medflies were trapped in the Elysian Park area of Los Angeles. All of the flies were found at the same location on Sargent Place. Twelve male Medflies were found in a Jackson/trimedlure trap, and six males and sixteen females were found in a McPhail trap. Both traps were placed in a peach tree. CDFA inspector Dottie Hammond is credited with finding the Medflies.

Second and third instar Medfly larvae were collected from peaches at this same residence on August 8. The larvae were found by CDFA entomologists Lorin Bronson and Dick Penrose.

- Three Medflies were trapped August 10, 1989, in the Elysian Park area of Los Angeles. On Centennial Street, one unmated female was found in a McPhail trap in a peach tree. McPhail trap density is 80 traps per square mile. On Sargent Place, one unmated female and one sexually immature male were found in a McPhail trap in a peach tree. Twelve third instar larvae were found in a peach on Morton Avenue. All of the finds are within the aerial malathion/bait spray treatment area, and were found before CDFA applied the aerial treatment during the evening of August 10.

CDFA Economic Entomologist Dick Penrose and Inspectors Tony Haro and John Dittes found the larvae. Los Angeles County Department of Agriculture trappers Phil Davis, Ray Smith, and CDFA Inspector Dottie Hammond are credited with finding the trapped Medflies.

Release of sterile Medflies began on August 21, around the Elysian Park finds.

- Between August 14 and 15, 1989, Medfly larvae were found at three new locations in the Elysian Park area of Los Angeles. All of the finds are within the aerial malathion/bait spray treatment area and are near previous Medfly find sites. One third instar larvae was found on Morton Avenue in a peach on August 14, four third instar larvae were found on Morton Walk in a peach on August 14, and six third instar larvae were found in a peach on August 15 on Morton Avenue.

CDFA Economic Entomologists Dick Penrose, Virginia Lopez-Ayala and Lorin Bronson, and Inspector Tony Haro found the larvae.

- Medfly larvae have been found at two new locations in the Elysian Park area of Los Angeles. One third instar larva was found in a peach on Sargent Place on August 21. Four second instar larvae were found in a peach on Sargent Place on August 23. The finds are within the aerial malathion/bait spray and sterile Medfly release area.

CDFA Senior Economic Entomologist Dick Penrose and Inspectors John Dittes and Lynn Kataja found the larvae.

Santa Clara

- A male Medfly was trapped August 31, 1989, in Mountain View, Santa Clara County. The Medfly was found in a Jackson/tri-medlure trap placed in a pear tree on Jessie Lane. Santa Clara County Department of Agriculture trapper Mimi Blazek is credited with finding the fly.

CDFA Insect Biosystematist Eric Fisher determined that the male Medfly was sexually mature.

SUMMARY: 1989 MEDITERRANEAN FRUIT FLY FINDS THROUGH AUGUST 31

COUNTY	ADULTS TRAPPED	LARVAL PROPERTIES
Los Angeles	40	7
Santa Clara	1	0
	41	7

ORIENTAL FRUIT FLY, *Dacus dorsalis* -(A)- Numerous specimens of this serious pest have been trapped during this period in Southern California. An earlier find of Oriental fruit fly (OFF) was made on May 11 at Sacramento and details were included in the last issue of CPPDR [8 (1-2):4]. The following excerpts from reports by John Pozzi outline the recent finds.

Los Angeles

- A male OFF was trapped June 14, 1989, in Long Beach, Los Angeles County. The fly was found in a Jackson/methyl eugenol trap placed in a peach tree on Magnolia Avenue. Los Angeles County trapper Toni Barnes is credited with finding the OFF.
- On June 16, 1989, a male OFF was trapped in West Covina, Los Angeles County. It was found in a Jackson/methyl eugenol trap placed in a peach tree on Nikki Court. Los Angeles County trapper Pablo Busatto is credited with finding the OFF. Traps were increased to protocol levels.

McPhail trap density in the square mile around the OFF find site is at 25 traps per square mile because a male melon fly was trapped a few blocks east of the site on May 4. CDFA Insect Biosystematist Karen Corwin determined that the male OFF was sexually mature.

- On June 22, 1989, a male OFF was trapped in Hawthorne, Los Angeles County. It was found in a Jackson/methyl eugenol trap placed in a peach tree on Cerise Avenue. Los Angeles County trapper Boyd Ruse is credited with finding the OFF. Traps were increased to protocol levels. CDFA Insect Biosystematist Eric Fisher determined that the male OFF was sexually mature.
- Los Angeles County Department of Agriculture trapper Boyd Ruse found a male OFF on June 24, 1989, in a Jackson/methyl eugenol trap in the Lawndale area of Los Angeles. The trap was placed in a peach tree on Grevillea Avenue. The find site is 1.5 miles from an OFF trapped June 22 on Cerise Avenue in Hawthorne.
- An OFF trapped on July 2 was found in a Jackson/methyl eugenol trap that was placed in a peach tree on E. Gloria Street. On July 4, another OFF was trapped nearby in a Jackson/methyl eugenol trap placed in a peach tree on Alicia Street. Both OFF trap finds are approximately 1.2 miles from another OFF trapped June 16 on Nikki Court.

CDFA began male OFF annihilation treatments July 5 in a 1.5 mile radius around the three West Covina OFF find sites (13 square miles.) The Jackson/methyl eugenol trap density was five traps per square mile in the area of the E. Gloria Street OFF find. Los Angeles County Department of Agriculture trappers Paco Garcia and Rogelio Carranza are credited with finding the OFF.

- On July 12, 1989, Los Angeles County trapper Auturo Lomeli found a female OFF in a McPhail trap placed in an orange tree on DePalma Street, Downey. The find is approximately 12 miles from the male OFF annihilation treatment areas in Hawthorne/Lawndale and West Covina.

CDFA Insect Biosystematist Karen Corwin determined that the female OFF was sexually immature and without developed eggs.

- A male OFF was trapped July 19, 1989, in Cerritos, Los Angeles County. The fly was found in a Jackson/methyl eugenol trap placed in an apple tree on Clydepark Avenue. Los Angeles County Department of Agriculture trapper Daniela Davis is credited with finding the OFF.
- Twelve OFF were trapped July 22, 1989, at the same site in West Covina, Los Angeles County. Four male OFF were found in a Jackson/methyl eugenol trap and four males and four females were found in a McPhail trap. Both traps had been placed in the same peach tree on Alicia Street. An OFF was trapped at this same property on July 4. The site is within the West Covina male OFF annihilation treatment area. CDFA Inspector Fernando Munchmeyer made the finds.

CDFA Insect Biosystematist Eric Fisher made the identification and determined that the females did not contain eggs.

- A male OFF was trapped July 31, 1989, in Downey, Los Angeles County. The fly was found in a Jackson/methyl eugenol trap placed in a citrus tree on Luxor Street. Los Angeles County Department of Agriculture trapper Pamela Roseborough is credited with finding the OFF.
- An unmated female OFF was trapped August 3, 1989, in the Lawndale area of Los Angeles. The fly was found in a McPhail trap placed in a lemon tree on Compton Boulevard. Los Angeles County Department of Agriculture trapper Pamela Roseborough is credited with finding the OFF.

The find site is a few blocks from an OFF trap find on Grevillea Avenue and it is within the Hawthorne/Lawndale male OFF annihilation treatment area. CDFA Insect Biosystematist Karen Corwin determined that the female OFF was unmated and contained partially mature eggs .

CDFA began male OFF annihilation treatments August 3 in a 10-square-mile area around both Downey finds.

- On August 6, 1989, an unmated female OFF was trapped in the Hawthorne area of Los Angeles. The fly was found in a Jackson/methyl eugenol trap placed in a apricot tree on Kornblum Avenue. CDFA Inspector John Bercik is credited with finding the OFF. CDFA Insect Biosystematist Karen Corwin determined that the

female OFF was unmated and contained mature eggs.

- A male OFF was trapped August 9, 1989, in the Walnut Park area of Los Angeles. The fly was found in a Jackson/methyl eugenol trap placed in an avocado tree on Hope Street. Los Angeles County Department of Agriculture trapper Arturo Lomeli is credited with finding the fly. The find site is approximately four and one-half miles from the Downey male OFF annihilation treatment zone.
- Los Angeles County Department of Agriculture trapper Lisa Koller found a male OFF on August 21, 1989, in a Jackson/methyl eugenol trap she was inspecting in Rolling Hills. The trap was placed in a peach tree on Middleridge Lane South.
- A male OFF was trapped August 30, 1989, in Cerritos, Los Angeles County. It was found in a Jackson/methyl eugenol trap placed in a guava on Cortner Avenue. The find is approximately one and seven-tenths miles northwest from an OFF trapped on July 19 on Clydepark Avenue. Los Angeles County Department of Agriculture trapper Daniela Davis is credited with finding the OFF.
- Three male OFF were trapped August 31, 1989, in Los Angeles County.

One OFF was trapped on Caroldale Avenue in Carson. Los Angeles County trapper Toni Barnes found the fly while servicing a Jackson/methyl eugenol trap placed in a peach tree.

Los Angeles County trapper Armando Quinones found an OFF in a Jackson/methyl eugenol trap on Clark Avenue, Burbank. The trap had been placed in a persimmon tree.

While servicing Jackson/methyl eugenol traps in Cerritos, Los Angeles County trapper Daniela Davis found an OFF. The trap was placed in an orange tree on Droxford Street. OFF have previously been trapped near this site, and the find is within the Cerritos male OFF annihilation treatment area.

CDFA Insect Biosystematist Karen Corwin determined that all of the male OFF were sexually mature.

Orange

- A male OFF was trapped July 6, 1989, in Santa Ana, Orange County. The fly was found in a Jackson/methyl eugenol trap placed in a nectarine tree on Artesia Street. Orange County Department of Agriculture trapper Jose Ramos is credited with finding the OFF. Traps were increased to protocol levels.

- On August 8, 1989, a male OFF was trapped in Corona Del Mar, Orange County. The fly was found in a Jackson/methyl eugenol trap placed in a grapefruit tree on Heliotrope Avenue. Orange County trapper Karen Zakowicz is credited with finding the fly. CDFA Insect Biosystematist Karen Corwin determined that the OFF was sexually mature.

SUMMARY: 1989 ORIENTAL FRUIT FLY FINDS
THROUGH AUGUST 31

COUNTY	ADULTS TRAPPED	LARVAL PROPERTIES
Los Angeles	29	0
Orange	2	0
Sacramento	1	0
	32	0

APPLE MAGGOT, *Rhagoletis pomonella* -(A)- This pest has reappeared in California. This report by John Pozzi reviews the finding.

On July 18, 1989, four apple maggots (AM) were trapped in Hoopa, Humboldt County. These are the first AM trapped in California this year. Agricultural and Standardization Inspector Richard Spadoni found the two females and two males in an AM trap placed in a apple tree.

WEST INDIAN FRUIT FLY, *Anastrepha obliqua* -(A)- One specimen of this exotic fruit fly, constituting a second California record, was collected in Los Angeles County during this period. The following report by John Pozzi outlines the find details.

A male West Indian fruit fly, *Anastrepha obliqua*, was trapped in the City Terrace area of Los Angeles County. It was found in a

McPhail trap placed in an orange tree on Hammel Street. Los Angeles County Department of Agriculture trapper Kirk Hartman is credited with finding the fruit fly.

CDFA Insect Biosystematist Eric Fisher made the identification and determined that the male West Indian fruit fly was sexually immature.

The only other time a West Indian fruit fly has been trapped in California was on June 22, 1967, in Wilmington, Los Angeles County.

CDFA Insect Biosystematist Eric Fisher supplied the following information:

The West Indian fruit fly is an abundant and widespread pest species ranging throughout Mexico, the Caribbean, Central America, and northern South America, south to Brazil. It has been found several times in Florida and may possibly be established in very low numbers in the Florida Keys. It has also been trapped in Texas.

The primary hosts are members of the Anacardiaceae, especially *Spondias* spp. (mombins or hog plums) and mangos, *Mangifera indica*, of which it is a major pest. It commonly infests guava, *Psidium guajava*, and has been found in many other tropical genera, in various families, including *Citrus* (grapefruit and other species). Other reported hosts include apples, pears, and nectarines, but these records are questionable because they are based on laboratory rearings.

West Indian fruit fly has a development time (egg to adult) of 21 to 28 days under favorable conditions. Adult sexual maturity is attained in 14 to 17 days and average longevity is about three months. The Exotic Pest Analysis Staff at CDFA has concluded that this fly could possibly survive year-round in warmer parts of southern California.

Anastrepha obliqua was previously known as *A. mombinpraeoptans* (the two are now synonyms), and it has been confused with *A. acidusa*, which is now considered to be a distinct species; host records can be found under all three names. This species is very similar in appearance to various other *Anastrepha*, especially members of the fraterculus group. Males may be particularly difficult to identify in some instances; the best means for distinguishing species in this group is the shape of the female ovipositor.

AN EXOTIC FRUIT FLY, *Anastrepha striata* -(A)- Yet another exotic *Anastrepha* fruit fly was also found in Los Angeles County. The following report is by J. Pozzi.

Anastrepha striata was trapped July 28, 1989, in the Elysian Park area of Los Angeles. It was found in a McPhail trap placed in a peach tree on Stadium Way. Los Angeles County Department of Agriculture trapper Jim Hartman is credited with finding this exotic fruit fly.

The find is approximately one-half mile from the Medfly trapped July 20 on Morton Avenue. McPhail trap density had been raised in this area to 25 traps per square mile in response to the Medfly find.

The Los Angeles County Department of Agriculture has increased McPhail trap density to a 80-40 array in a 9-square-mile area around the *Anastrepha striata* find.

CDFA Insect Biosystematist Eric Fisher supplied the following information:

Anastrepha striata is a common fruit fly widely distributed in Latin America, where it ranges from northern Mexico south to Brazil and Peru. In the United States, it has been trapped in Texas and California. In September, 1963, one male *Anastrepha striata* was found in San Ysidro, San Diego County, California (in a McPhail trap in a pepper tree, *Schinus molle*). It has also been found in Tijuana, Baja California, Mexico, which is only a few miles south of San Ysidro. In October of 1988, one male was collected there in a McPhail trap in a "zapota tree." The primary hosts of *Anastrepha striata* are various species (eight species recorded) of guava (*Psidium* spp.). This fly is also a minor pest of mango (*Mangifera indica*), and it has been reared from many other genera of plants, in various families, some of which are important to California agriculture. Included among these are orange (*Citrus sinensis*), avocado (*Persea americana*), and peach (*Prunus persica*), plus ornamental species of *Annona*, *Chrysophyllum*, *Diospyros*, *Eugenia*, *Mankara*, and *Passiflora*.

Anastrepha striata is very distinctive in appearance. It has a conspicuous, black, U-shaped mark on top of the thorax and a unique color pattern on the wing (the outer arm of the "V-band" is very thin). These characteristics make it one of the most easily-recognized of the 180 known species of *Anastrepha*.

GYPSY MOTH, *Lymantria dispar* -(A)- An unusually large number of gypsy moths (GM) were trapped this year. The following excerpts outline the many finds during this period.

Alameda

- On July 14, 1989, Alameda County Department of Agriculture Pest Detection Specialist Warren Proctor found a GM in a Delta/GM trap that was placed in a Zelkova tree on Ward Street. Delta/GM trap density in the area was three traps per square mile.
- A second GM was trapped July 15, one-half mile south on Prince Street. The trap had been placed in a mulberry tree. Alameda County Department of Agriculture Pest Detection Specialist Sam Hale is credited with finding the moth. Additional Delta/GM traps are being distributed as required to meet protocol levels for the new GM trap finds.

Los Angeles

- County trapper Elaine Gibbs found a GM June 19 in a GM trap placed at a residence on Brenford Street in Woodland Hills.
- Two GM were trapped July 28, 1989, in Newhall and Chatsworth, Los Angeles County.

A GM was found in a Delta/GM trap in an ash tree on Chestnut Street in Newhall. Delta/GM trap density in the area is 25 traps per square mile. Last year a GM was trapped about a mile southwest on Apple Street.

In response, CDFA has increased the Delta/GM trap density as needed to 25 traps per square mile in a four-square-mile area around the find. CDFA Inspector Eric Lundgren is credited with finding the moth.

Los Angeles County Department of Agriculture trapper Elaine Gibbs found a GM in a Delta/GM trap in Chatsworth. The trap was placed on Shadow Oak Drive. Delta/GM trap density in the area was three traps per square mile.

- Los Angeles County Department of Agriculture trapper Elaine Gibbs found a gypsy moth in a Delta/GM trap she had serviced August 4 in Sun Valley. The trap was placed in citrus on Remick Avenue.

Marin

- A GM was detected July 6 at a residence located on Lagoon Vista in Tiburon. CDFA Inspector Ramona Saunders was preparing to place a Delta/GM trap at the property when she caught the moth as it flew toward her. The homeowner had moved to the area from Connecticut and CDFA Pest Exclusion had previously issued a Gypsy Moth Warning Notice (66.008A). Ramona surveyed the property and found GM larval and pupal skins on a ladder.
- A GM was trapped July 7 at the same Lagoon Vista residence in Tiburon where a GM was found on July 6. CDFA Inspector Melena Schneider is credited with finding the moth while servicing a GM/Delta trap.
- In Lagoon Vista on July 7, two male and one female moths, cast pupal skins, and three male and one female pupae were found in an ornamental plum tree by Marin County Agricultural and Weights and Measures Inspector Andrea deGrassi.
- On July 10, CDFA Agricultural Inspector Ramona Saunders found one GM in a GM/Delta trap placed in an ash tree and one GM in a GM/Pherocon trap set in a willow tree in Lagoon Vista.
- In Tiburon on July 10, a GM was found in a GM/Pherocon trap placed in an ash tree by Ramona Saunders. Also discovered at that time were a male moth, one male and one female pupal skin, and an old egg mass, all found by Neal Wright in house siding.
- On July 11 in Lagoon Vista, two female and five male GM pupae were found by CDFA Associate Economic Entomologist Neal Wright, CDFA Agricultural Biologist Mohammad Azhar, and Marin County Agricultural and Weights and Measures Inspectors Andrea deGrassi and Anita Sauber.
- On July 12, fragmented pupal case was found by Andrea deGrassi and Anita Sauber, again in Lagoona Vista.
- On July 12 in San Rafael on Summer Hill Court, Marin County Department of Agriculture Weights and Measures Inspector

Anita Sauber found two GM in a Delta/GM trap. CDFA Pest Exclusion had previously issued a GM warning notice (66.008A).

- A GM was found on July 13 in a Delta/GM trap placed in an acacia tree on Sunset Drive in Novato. CDFA Inspector Melena Schneider is credited with finding the moth.

Marin County Department of Agriculture Deputy Commissioner Jack Schrock and Weights and Measures Inspector Anita Sauber surveyed nearby properties on which CDFA Pest Exclusion had previously issued GM warning notices (66.008A) and found a GM cast larval skin on South Oakwood.

- While inspecting Delta/GM traps in Fairfax on July 13, CDFA Inspector Ramona Saunders found a GM. The trap was placed in a oak tree on Hillside Lane.
- On July 17, a GM was detected in a Delta/GM trap placed in a bay tree on Forrest Avenue, Fairfax. CDFA Inspector Ramona Saunders serviced the trap. The find is approximately one-half mile from a GM trapped July 13 on Hillside Lane.
- Another GM was detected on July 17 in a Delta/GM trap placed in a pine tree on Ridge Road, approximately one-half mile from the Lagoon Vista GM trap finds in Tiburon. CDFA Inspector Ramona Saunders serviced the trap.
- On July 17, three GM were trapped at separate locations within the same condominium complex in Lagoon Vista. CDFA Inspector Ramona Saunders is credited with finding the moths.
- On July 18, CDFA Detection Entomologist Neil Wright found a GM in a Delta/GM trap that was placed in an oak tree on Summer Hill Court in San Rafael. This find is near GM trap find on July 12 also on Summer Hill Court.
- A GM was detected in San Anselmo on July 19 in a Delta/GM trap placed in a pine tree on Austin Avenue. CDFA Inspector Ramona Saunders serviced the trap.

- A GM was trapped July 20 in San Anselmo. CDFA Agricultural Pest Control Specialist Joanne Shimada found the moth in a Delta/GM trap that was placed in an oak tree on San Anselmo Boulevard. The find is approximately one-quarter mile from a GM trapped July 17 on Forrest Avenue.
- A GM was trapped August 1 in Tiburon. CDFA Inspector Melena Schneider found the moth in a Delta/GM trap that was placed at the same Lagoon Vista condominium complex where 12 GM have been previously trapped.
- Two GM were trapped August 15, 1989, in Tiburon, Marin County. CDFA Inspector Melena Schneider found both moths. One gypsy moth was found in a pherocon trap placed in a willow tree on Lagoon Vista and the other moth was found nearby on Mar West Street in an acacia tree. The finds are at or near the Lagoon Vista condominium complex where 14 GM have been trapped this year.

Nevada

- While servicing a Delta/GM trap on July 5, near Grass Valley, Nevada County Department of Agriculture Biologist Susan Stange found a GM. The trap was placed in an oak tree on Duggans Road. On July 6, Stange found a GM in a Delta/GM trap near the intersection of Duggans Road and Wolf Meadows Drive. The find location is within one-half mile of the gypsy moth trapped July 5 on Duggans Road.
- While inspecting GM/Delta traps on July 10, Susan Stange found another GM. The trap had been placed in an oak tree on Duggans Road. The location is within one-quarter mile of two previously trapped GM.

Orange

- A GM was trapped July 11 in Fullerton. Orange County Department of Agriculture trapper Heidi Glickman found the moth in a GM/Delta trap. The trap was placed in a plum tree on Jefferson Avenue.
- A GM was trapped on July 19 in Anaheim. Orange County Department of Agriculture Technician Manuel Varela found the moth in a GM/Delta trap that was placed in an orange tree on

Douglass Road. The find is about seven miles east of a GM trapped on July 11 in Fullerton.

Placer

- Placer County Department of Agriculture Weights and Measure Inspector Karen Connelly found a GM on June 15, 1989, in a GM trap placed in an oak tree at a residence on Hill Road in Roseville. The trap was placed at the property as a result of a Gypsy Moth Warning Notice (66.008A) previously issued by the Pest Exclusion Branch. The homeowner had moved to California in January of this year from Ridgefield, Connecticut.

CDFA Detection Entomologist Neil Wright and Insect Biosystematist Tom Eichlin surveyed the property June 16 and found one live late-stage larva, one live female pupa with larval skin, six pupal skins, and six larval skins.

Placer County Department of Agriculture personnel had recovered GM egg masses earlier this year from homeowner items. GM traps were deployed at a density of 25 traps per square mile.

- Placer County Department of Agriculture Inspector Karen Connelly found another GM on June 21, 1989, in a GM trap placed in an oak tree on Hill Road in Roseville. Karen Connelly found yet another GM while servicing a Delta/GM trap July 10 on Hill Road near Roseville. The trap was placed in an oak tree.

Sacramento

- Sacramento County Department of Agriculture trapper Teresa Kaiser found a GM while servicing a GM/Delta trap July 13 on Wilkins Way, Carmichael.

San Diego

- Gypsy moths were trapped at two sites. One moth was found June 19 in a GM trap placed in an oak tree on Vesper Road near Valley Center in Northern San Diego County. Three more gypsy moths were trapped June 20 in La Mesa. All of the moths were found in the same GM trap placed in a pepper tree on Black Mountain Road. San Diego County Department of Agriculture Technicians Bob Jones and Dennis Stowell are credited with finding the gypsy moths.

- On June 22, a GM was trapped in a Delta/GM trap in La Mesa, San Diego County. The trap was in a pepper tree on Acacia Avenue. San Diego County Agricultural Technician Bob Jones is credited with finding the GM.
- On June 24, a GM was found in a Delta/GM trap placed in a Brazilian pepper tree on Black Mountain Road, La Mesa. San Diego Trapper Kim Bowen found the moth.
- On July 5, a GM was trapped on Black Mountain Road in La Mesa. San Diego County Department of Agriculture Technician Mulu Wube found the GM in a GM/Delta trap placed in a pecan tree.
- A GM was trapped on July 20, 1989, in a Delta/GM trap in La Mesa, San Diego County. The trap had been placed in a ficus tree on Palm Avenue. This find is one-half mile from a GM trapped on Acacia Avenue and one-quarter mile from GM trapped on Black Mountain Road. San Diego County Agricultural Technician Aide Kim Bowen is credited with finding the GM.

San Joaquin

- A GM was trapped August 8, 1989, in Manteca, San Joaquin County. The moth was found in a Delta/GM trap placed in a silk tree on Shepard Way. San Joaquin County Department of Agriculture Pest Surveyor Laura Duren is credited with finding the moth.

San Mateo

- A GM was trapped in a Delta/GM trap on July 17 in Menlo Park. San Mateo County Department of Agriculture Pest Detection Specialist Bob Swanson is credited with finding the moth.

Santa Clara

- A GM was trapped July 3 at a property on Holly Leaf Lane in San Jose. The moth was found in a Delta/GM trap that had been placed at the property as a result of a Gypsy Moth Warning Notice (66.008A) previously issued by CDFA Pest Exclusion. The homeowner had moved to the area from New Jersey. Santa Clara County Department of Agriculture trapper Jesus Sanchez is credited with finding the GM.

Tuolumne

- In Sonora, Tuolumne County Department of Agriculture Field Assistant Bob Stokes found a GM in a Delta/GM trap he was servicing on July 19. The trap was placed in an oak tree on Mono Way.

Ventura

- A GM was trapped June 28, on property at Ridgecrest Place in Thousand Oaks. The Delta/GM trap had been placed in an oak tree. Ventura County trapper Dan McCann found the moth.

On July 12, a GM was trapped on Brightstone Court in Thousand Oaks. The moth was found in a GM/Delta trap that was placed in a pine tree. The find is approximately two miles from a GM trapped on June 28.

SUMMARY: 1989 GYPSY MOTH FINDS
THROUGH AUGUST 31

COUNTY	ADULTS TRAPPED	PROPERTIES EGG MASSES/ PUPAL CASES
Alameda	2	0
Los Angeles	4	0
Marin	24	1
Nevada	3	0
Orange	2	0
Placer	3	1
Sacramento	1	0
San Diego	9	0
San Mateo	1	0
Santa Clara	1	0
Shasta	2	0
Tuolumne	1	0
Ventura	2	0
	55	2

VARROA MITE, *Varroa jacobsoni* -(A)- First found in State apiaries earlier this year [CPPDR 8(1-2):5-8], this honey bee predatory mite has again been collected from apiaries in the state.

- Nine Varroa mites (VM) were detected on June 12, 1989, near Lake Mathews, Riverside County. Riverside County Department of Agriculture Apiary Inspector Tom Vizthum is credited with find-

ing this A-rated pest.

The apiary consists of 148 colonies and was sampled at the request of the beekeeper. He needed VM certification for his anticipated interstate movement.

The infested apiary has been placed under hold order pending abatement of the pest as provided for in the Apiary Protection Act. The 30-day treatment will be at the beekeeper's expense. The shipment can be VM certified upon completion of treatment.

Six VM were detected on June 21, 1989, in La Costa, Riverside County. Tom Vizthum of Riverside County Department of Agriculture is credited with finding *Varroa jacobsoni* in this apiary. The beekeeper had requested certification required by Utah prior to interstate movement.

The infested apiary has been placed under hold order pending abatement of the pest as provided for in the Apiary Protection Act. The beekeeper will be billed for the 30-day treatment with Apistan Strips. Certification can be issued after completion of treatment and payment for services rendered.

NEW STATE RECORDS

AN EXOTIC FRUIT FLY, *Anastrepha serpentina*-(A)- A third exotic *Anastrepha* species has been collected in Los Angeles County this period (see earlier accounts on pages 46 and 48.) There following reports were prepared by John Pozzi.

Los Angeles County trapper Kirk Mizobayashi found *Anastrepha serpentina* in a McPhail trap placed in a loquat tree on East 62nd Street in Los Angeles. This is the first time this fruit fly has been trapped in California.

CDFA Biosystematist Eric Fisher made the identification and determined that the female *Anastrepha serpentina* was unmated and without developed eggs.

Eric Fisher provided the following information about this pest:

Anastrepha serpentina is a very distinctive species with dark brown markings on the body and wings. The wing pattern is unique and allows this species to be readily identified (Figure 1).

Anastrepha serpentina is widespread in Latin America; it has been found throughout the tropical parts of Mexico and Central Amer-

ica, and occurs as far south as Peru and Brazil. It has been trapped on several occasions in the Rio Grande Valley of Texas.

It is considered an important pest species in most areas of its range and infests a moderate number of plant species in several families. Its primary hosts include various kinds of "sapotes" and other exotic fruits, listed roughly in order of importance: *Calocarpum*, *Malikara*, *Chrysophyllum*, *Pouteria*, *Annona*, *Spondias*, *Mammea*, and *Mangifera* (mango). This fruit fly has also been reported to infest peach, *Prunus persica*, and several species of *Citrus*, including grapefruit and orange.

NEW COUNTY RECORDS

COMSTOCK MEALYBUG, *Pseudococcus comstocki* -(A)- Under eradication in Tulare, Kings, Kern and Stanislaus Counties during the early 1970's, this mealybug pest is now considered to be under good biocontrol in the infested areas.

Comstock Mealybug has been found in Fresno County for the first time. The discovery was made on August 18, 1989, at a Fresno residence on North Vagedes Avenue. Fresno County Department of Agriculture Biologist Tim Woody was responding to the homeowner's request for information regarding unusual white masses on his mulberry tree.

TORPEDO BUG, *Siphanta acuta* -(B)- This interesting planthopper, in the family Flatidae, was first recorded as established in California at San Diego in 1983 [see CPPDR 2(1):10], although it was later found that an adult specimen had been collected by an entomology student as early as 1980 [see CPPDR 2(6): 172]. Since that time, it has been found in Los Angeles County (1983) and now in Orange County.

Specimens have been collected in Laguna Niguel, Orange County on August 21 by home owner J. H. Mitchell and Orange County Entomologist Nick Nisson. Nick reports that the insects were heavily infesting eucalyptus, fuchsia, *Bignonia* and other hosts.

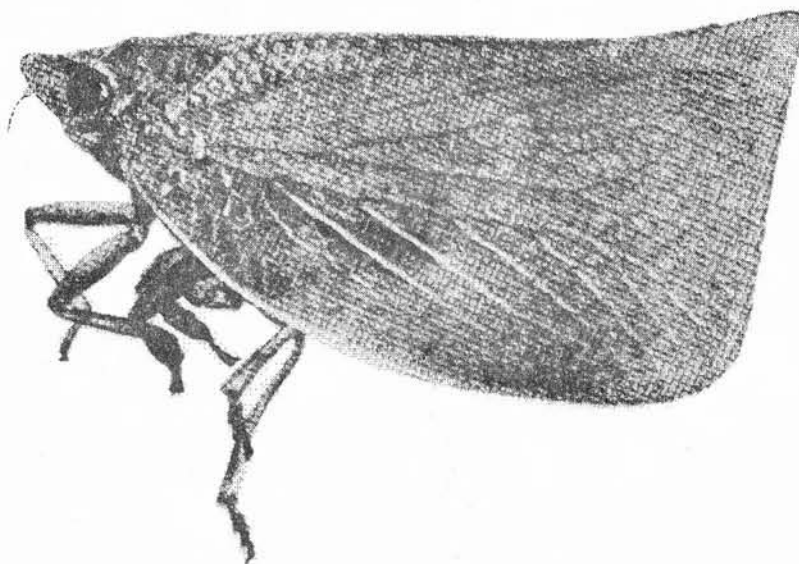
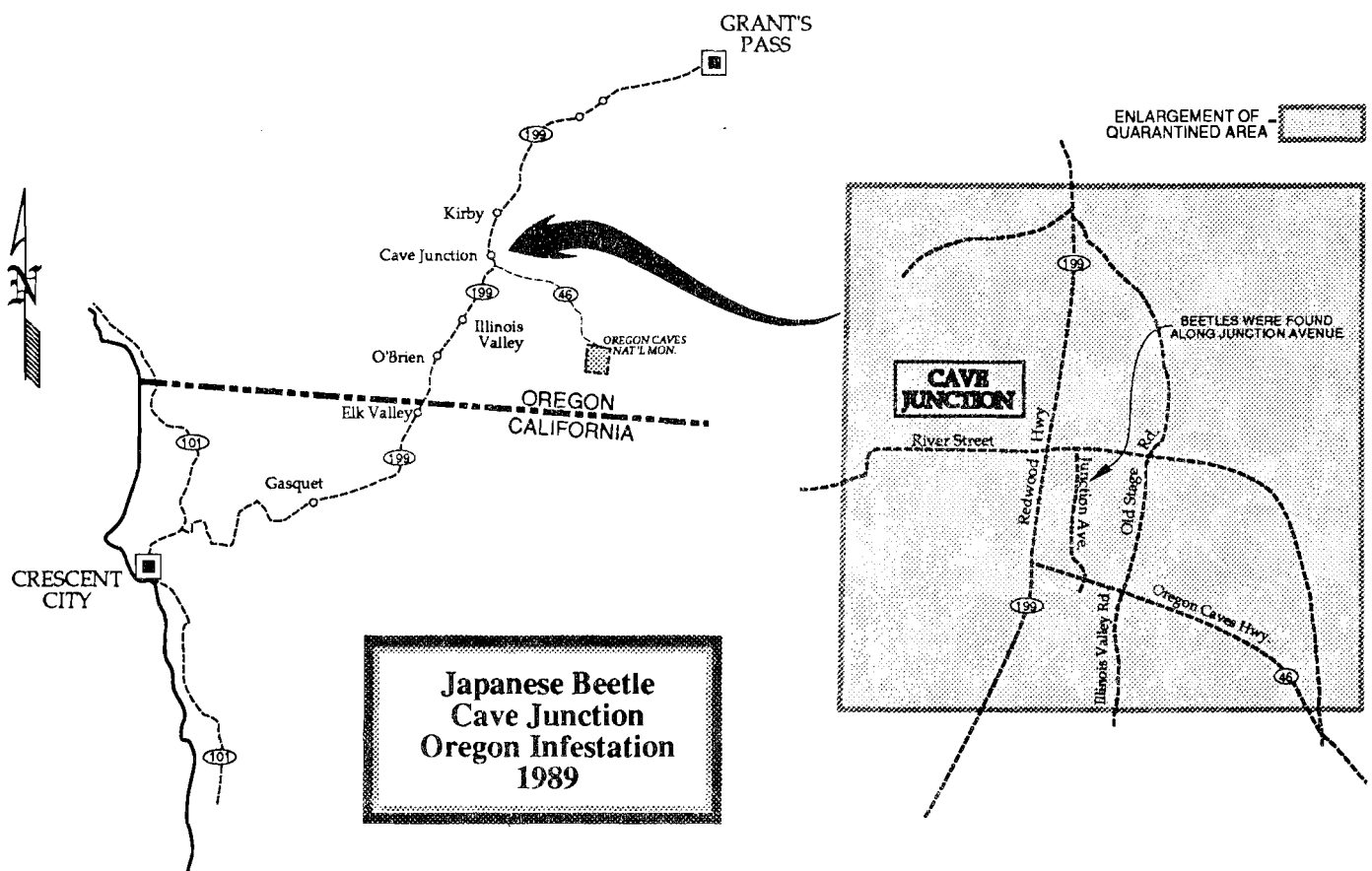


Figure 1: Torpedo Bug, *Siphanta acuta*, lateral view

SIGNIFICANT FINDS IN OTHER STATES

OREGON Japanese Beetle Infestation - When 18 adult Japanese beetles were trapped in the Oregon community of Cave Junction, about 14 miles north of the Redwood Highway Station, the Oregon State Department of Agriculture imposed an emergency quarantine on a four-square-mile area on July 25. The owners of one infested property stated that the beetles were on the property when they moved there in the spring of 1988. On another property where seven beetles were captured, the owner was quoted in a newspaper article as saying, "We know that they've been here awhile."



A BOSTRICHID BEETLE, *Heterobostrychus hamatipennis*-(Q)- An adult bostrichid beetle was found making tunnels in one of the legs of a wicker basket purchased at store in Mecklenburg County, NC (south of Charlotte). The specimen (a male) has been tentatively identified as *Heterobostrychus hamatipennis* (Lesne), commonly found in Indo-China. This find represents a new state record and only the second recorded occurrence of the pest in the U.S.; the first record was in Florida in August of 1988.

Pest Exclusion

JAPANESE BEETLE, *Popilla japonica* -(A)- This serious beetle pest continues to be found in aircraft arriving from eastern airports. The following accounts trace the various collections made through September 1, 1989.

Alameda

- On July 11, two Japanese Beetles (JB) were intercepted on aircraft landing at Oakland International Airport. One was found alive on a United Parcel Service aircraft from Louisville. The other beetle was dead when found on a Federal Express aircraft from Maryland, via Memphis. Alameda County Department of Agriculture Pest Detection Specialists Dave Gould and Sharon Neklason are credited with finding the JB.
- Eleven JB were intercepted from United Parcel Service aircraft landing at Oakland International Airport between July 12 and 19. One of the beetles was alive when found. All of the flights originated from Louisville. Alameda County Department of Agriculture Senior Biologist Jim Newey and Detection Specialists Dave Gould, Mara Larson, Janet Lutsch, and Sharon Neklason are credited with finding the beetles.
- Between July 21 and 25, six JB were intercepted on United Parcel Service aircraft landing at Oakland International Airport. Two of the beetles were alive when found. All of the flights originated from Louisville, Kentucky. Alameda County Department of Agriculture Deputy Commissioner Earl Whitaker, Senior Biologist Jim Newey and Detection Specialists Dave Gould, Cheryl Mailho, Patricia Rushing, and Sharon Neklason are credited with finding the beetles.
- Eighteen JB were discovered on United Parcel Service aircraft landing at Oakland International Airport between July 26 and 28. All of the flights originated from Louisville. Nine of the beetles were alive when found. Alameda County Department of Agriculture Deputy Commissioner Earl Whitaker, Senior Biologist Jim Newey, and Detection Specialists Dave Gould, Cheryl Mailho, Sharon Neklason, and Patricia Rushing found the beetles while inspecting an aircraft.

- Eleven dead JB were discovered on United Parcel Service aircraft landing at Oakland International Airport between July 31 and August 11. All of the flights originated from Louisville. Alameda County Department of Agriculture Senior Biologist Jim Newey, and Detection Specialists Dave Gould, Janet Lutsch, and Mara Walls are credited with finding the JB.
- Six dead JB were discovered on United Parcel Service aircraft landing at Oakland International Airport on August 2 and August 14 through 17. All of the flights originated from Louisville. Alameda County Department of Agriculture Senior Biologist Jim Newey, Detection Specialists Janet Lutsch and Mara Walls are credited with finding the JB.

Los Angeles

- CDFA Inspector David Hernandez found a male JB on June 6, 1989, while inspecting JB traps near Los Angeles International Airport. The trap was placed in roses on 99th Place. A JB was trapped last year on 98th Street; the site is within a few blocks of last year's trap find. The JB trap density for new JB trap finds is already at the protocol level of 50 traps per square mile.
- A female JB was trapped July 17, 1989, at Los Angeles International Airport. It was found in a JB trap placed on World Way. CDFA Inspector John Ison is credited with finding the JB. CDFA Insect Biosystematist Fred Andrews determined that the female JB was gravid and internally fresh.
- CDFA Inspectors Kathleen Hill and Leena Ogoke found two dead JB July 19 and 21 on United Parcel Service flights from Louisville.
- On July 24, 1989, a female JB was trapped at Los Angeles International Airport. The beetle was found in a JB trap placed on World Way. This find is approximately one-half mile from a JB trapped July 17 on World Way.
- Four JB were discovered on aircraft landing at Los Angeles International Airport between July 25 and 27. One of the beetles was intercepted alive on an American Airlines flight from John F. Kennedy International Airport in New York. The remaining three beetles were found dead on a Flying Tigers aircraft from Ohio, a

- United Airlines flight from Newark, New Jersey, and a United Parcel Service aircraft from Louisville, Kentucky. CDFA Inspectors Refat Antoun, Kathleen Hill, and Joe Jimenez are credited with finding the beetles.
- A male JB was trapped August 7, 1989, at Los Angeles International Airport. The beetle was found in a JB trap placed in impatiens on Aviation Avenue. CDFA inspectors Refat Antoun and Joe Jimenez are credited with finding the beetle.
- Between August 8 and August 14, 18 dead JB were found on aircraft landing at Los Angeles International Airport. The finds were made on one United Parcel Service flight from Louisville, Kentucky; three Burlington Air Express flights from Fort Wayne, Indiana; a Continental Airlines flight that originated in Boston, Massachusetts; and an United Airlines flight from Washington/Dulles International via Denver. CDFA Inspectors Refat Antoun, Kathleen Hill, Joe Jimenez, and Leena Ogoke are credited with finding the JB.
- Between August 3 and August 18, 30 JB were found on aircraft landing at Los Angeles International Airport. Two were found on aircraft landing at Los Angeles International Airport. Two of the beetles were intercepted alive on a Burlington Air Express and United Parcel Service flights from Fort Wayne, Indiana, and Louisville, Kentucky, respectively. The dead JB were found on Burlington Air Express flights from Fort Wayne, Indiana; United Parcel Service flights from Louisville, Kentucky; and United Airlines flights from Baltimore via Chicago and Newark, New Jersey. CDFA Inspectors Refat Antoun, Kathleen Hill, John Ison, Joe Jimenez, and Leena Ogoke are credited with finding the JB.
- On August 16, 1989, a female JB was trapped near Los Angeles International Airport. The beetle was found in a JB trap placed in a hibiscus on 96th Street. CDFA Inspectors Refat Antoun and Joe Jimenez are credited with finding the beetle. CDFA Insect Biosystematist Fred Andrews determined that the female Japanese beetle was gravid.

Sacramento

- CDFA Inspector Constance Weiner found a dead JB July 27 on a Continental Airlines flight from Cleveland, Ohio, landing at Sac-

ramento Metro Airport.

San Bernardino

- CDFA Detection Entomologist Gene Drake found a dead JB on June 28, 1989, aboard a United Parcel Service aircraft landing at Ontario International Airport. The aircraft had originated from Louisville, Kentucky. This is the first JB found in 1989 as a result of CDFA monitoring aircraft from JB infested areas outside California.
- CDFA Detection Entomologist Gene Drake found a dead JB July 10 on a United Parcel Service aircraft landing at Ontario International Airport. The flight originated in Philadelphia.
- Between July 13 and 20, ten JB were discovered on United Parcel Service aircraft landing at Ontario International Airport. Eight of the beetles were alive when found. The flights originated from Louisville and Philadelphia. CDFA Detection Entomologist Gene Drake, Exclusion Biologist Mike Cochran, and Inspector Tony Haro found the JB.
- Four dead JB were found on United Parcel Service aircraft landing at Ontario International Airport on July 21 and 24, 1989. The flights originated from Louisville and Philadelphia. CDFA Exclusion Biologist Mike Cochran and Inspector Tony Haro are credited with finding the beetles.
- Between July 26 and August 1, 36 Japanese beetles were found on United Parcel Service aircraft arriving at Ontario International Airport. The flights originated from Philadelphia and Louisville. Three of the beetles were alive when found. CDFA Detection Entomologist Gene Drake, Exclusion Biologist Mike Cochran, and Inspector Tony Haro are credited with finding the beetles.
- CDFA Detection Entomologist Gene Drake found three dead JB August 2 at Ontario International Airport aboard two United Parcel Service aircraft from Philadelphia and Louisville.
- CDFA Detection Entomologist Gene Drake found five dead JB on August 4 and 8 aboard two United Parcel Service flights from

Philadelphia and Louisville that landed at Ontario International Airport.

San Mateo

- While inspecting aircraft landing at San Francisco International Airport between July 10 and 13, CDFA inspectors found nine JB. One live and one dead beetle were discovered aboard a Piedmont Airlines flight originating from Islip, New York. One live and two dead JB were found on a Delta Airlines flight from La Guardia on July 11, and four dead beetles were intercepted on two other Delta flights from La Guardia.
- Two dead JB were found on commercial passenger aircraft landing at San Francisco International Airport. On July 14, CDFA Inspector Robert Blackiston found a JB aboard a Delta flight from La Guardia via Cincinnati. CDFA Inspector Curtis Takahashi found another beetle July 20 on an American Airlines aircraft that originated from Dayton via Chicago.

Santa Clara

- CDFA Inspector David Martin found a dead JB July 25 on an American Airlines flight from Cincinnati.

SUMMARY: 1989 JAPANESE BEETLE FINDS THROUGH AUGUST 31

COUNTY	ADULTS TRAPPED	NUMBER AIRPORT INTERCEPTIONS ALIVE/DEAD/TOTAL
Alameda	0	13/41/54
Los Angeles	5	3/51/54
Sacramento	0	0/1/1
San Bernardino	0	11/48/59
San Mateo	0	2/9/11
Santa Clara	0	0/1/1
	5	29/151/180

RED IMPORTED FIRE ANT, *Solenopsis invicta* -(A)- With all of the excitement over exotic fruit flies and gypsy moths recently, it might be easy to forget another possible invasion by a very serious insect pest, the red imported fire ant (RIFA). However, one alert County Biologist didn't forget, and as a result probably prevented the establishment of this dreaded pest in California. The following report was prepared by Allen Clark, Pest Exclusion Branch.

This is to advise you of a recent red imported fire ant problem that came to light. Contra Costa County Biologist Suzanne Ziegler, found dead RIFA and live reproducing nests of RIFA in pallets of asphalt shingles from a manufacturer in Ennis, Texas. Although asphalt shingles are not a regulated article for RIFA, the pallets of shingles appear to offer a good environment for the pest.

Shipments of shingles were found by the Arizona Department of Agriculture to have occasional stragglers of RIFA for which they required fumigation. Since the nests are typically found in the bottom two or three layers of shingle packages and near the middle of the pallet, it is not possible to determine if nests are present until the packages of shingles are opened and inspected.

Most recently, a shipment was delivered to California Shingle and Shake Company in Pleasant Hill. From there, it was distributed to a construction site. The roofers on a three-story home noticed the ants when they opened a pallet of shingles. Contra Costa County collected the infested bundle and treated it. Both winged forms and workers were found. The remainder of the pallets were under hold until they could be inspected for RIFA.

Pest Exclusion then contacted the Texas Department of Agriculture. Until the infestations could be removed from the pallets, no further shipments were accepted by the border stations unless the shipment had been fumigated with methyl bromide (T411 of the Federal Treatment Manual).

The shipper supplied a list of current customers they have in California. This information was relayed to the affected counties through Pest Detection and Emergency Projects Branch for follow up inspections of the receivers and trapping as was needed.

CDFA worked with the Texas Department of Agriculture (TDA) and the shipper. From the on-site investigation, it appeared that the palletized shingles were stored on or near RIFA infested soil. After the heavy rains in the area, the RIFA moved into the shingles in order to escape their water-logged nests in the ground. Nests were found which began in soil and were built up to and supported by pallets or shingles.

TDA and the shipper eliminated the nests on the property and are maintaining an ongoing treatment regime to prevent any more nests from becoming established. The pallets already on the property have been fumigated or inspected and found free of RIFA.

We believe that the problem has been corrected. Consequently, we will no longer require fumigation of the shipper's shingles.

Please note that this episode occurred with a non-agricultural item. We recommend that any reports of ants in shipments of any sort from RIFA areas be investigated.

GYPSY MOTH, *Lymantria dispar* -(A)- As of July 28, many gypsy moths have been trapped in California. The following report by the Pest Exclusion Branch addresses some of the possible causes for the large number of finds.

To date, the GM has been trapped 48 times in 13 different counties. While the total number trapped represents a significant increase over 1988 when only 13 moths were trapped, the significant element is that it now appears that spring 1990 treatments will be required in as many as four locations.

Circumstances surrounding these four discoveries suggest that inadequate inspection, no inspection, or improper removal of egg masses have contributed to the establishment of the pest. Whatever the case, there is a clear need to make sure that inspection is made of all the outdoor household articles included or associated with household moves from GM infested areas.

Quarantine supervisors should review the "GM Referral Program Procedural Manual" with all inspection personnel. Emphasis should be placed on thorough inspection, possession of all needed supplies and equipment, proper removal and handling of GM egg masses, and appropriate action to be taken when live larvae, pupae or adults are discovered. Questions regarding the latter should be directed to your local Pest Detection/Emergency Projects representative.

In at least two current season incidents, there has been reason to believe that the infestations may have developed from egg masses carried on vehicles. Recreational vehicles, travel trailers, and other seldom used vehicles are often found to be infested during border station inspections. Automobiles which are manifested as part of a shipment of household effects should be inspected. Vehicles which are used regularly are not likely to be infested, but

when available, at least a cursory inspection can be made. Collector cars or other old vehicles which have been stored outside and which were used infrequently during the previous spring should be inspected carefully.

One key to a good inspection will be developing a friendly relationship with the householder and asking the right questions as to what kinds of outdoor articles may have been moved and then following through with a careful inspection. Finally, a reminder to place a GM trap on every property where any lifestage (dead or alive) of the GM is discovered. A trap should be in place for the season in which the move occurred as well as in the succeeding one.

The "GM Referral Program Procedural Manual" is in the revision process and it is expected to be re-issued within the next six weeks. In the interim, this Advisory and the old manual will serve as the current direction. If you have questions, please direct them to your Pest Exclusion Area Supervisor (Dee Sudduth, Southern; Bill Downer, Central; or Donna Cameron, Northern) or to Bill Sandige at (916) 445-8314.

Border Stations

The Border Station section of the last issue of CPPDR carried an article about the interception of red imported fire ants. Also it should be noted that during Fiscal Year 1988/89, 80 interceptions of fire ant were made at the border stations. By the 14th of August, 32 interceptions had already been made for this fiscal year. However, these are not the only ant interceptions being made. The following chart lists the ant finds made by quarantine inspectors during a two-week period from 7/25 to 8/8. The following chart by Dick Brown lists the border station, QI inspector, origin-destination, host and date.

Red Imported Fire Ant - *Solenopsis invicta* adults were found:

Blythe	Omar El-Nawasrah	TX to Pasadena	U-Haul	8/1
Needles	Rich McCollum	TX to Los Angeles	Watermelons	8/2
Needles	Jill Clark	TX to Los Angeles	Watermelons	8/3
Blythe	Glenn Noline	TX to Los Angeles	Watermelons	8/8

More Fire Ants - NOTE that these live *Solenopsis* sp. specimens were crushed during capture. They could not be identified to species. (They ran from the light when the door was opened, often under pallets).

Vidal	Rose Mary Walker	MS to Simi Valley	Lumber	7/3
Vidal	Robert Grangerd	PA to Bakersfield	Empty truck	7/31
Vidal	Rose Mary Walker	MS to Milpitas	Empty truck	7/31

Blackheaded Ant - *Tapinoma melanocephalum* adults were found:

Needles	Bob Derichsweiler	PA? to Placenta	Empty truck	7/20
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Another Ant - Live *Paratrechina* sp. adults were found in boxed Dieffenbachia from Puerto Rico, via Florida.

Winters	Jim Stanfield	FL to San Marcos	Plants	7/31
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Different Ant - Live *Tetramorium* sp. adults were found:

Vidal	Art Couture	TX to Bakersfield	Empty truck	7/25
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Carpenter Ants - Live *Camponotus* sp. adults were found:

Yermo	Joann Williams	CO to Anaheim	Firewood	7/30
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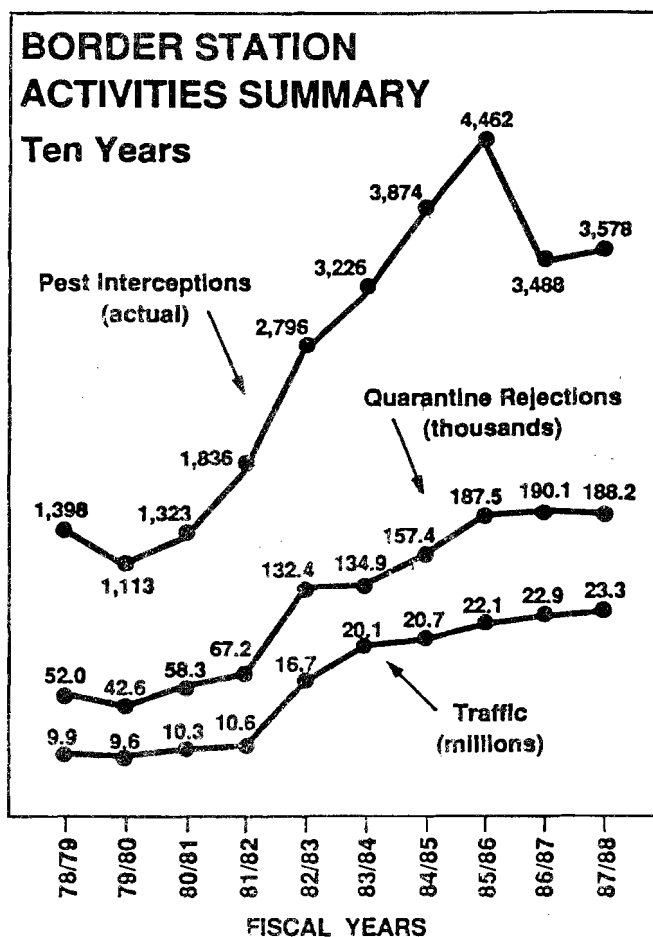
More Ants - Myrmecinae adults were found:

Vidal	Rose Mary Walker	FL to Sacramento	Empty truck	7/25
Vidal	Rose Mary Walker	GA to Oakland	Empty truck	7/31

The above chart reflects the interceptions of just one group of potential agricultural pest. To put things more in perspective, the following chart indicates the total amount of traffic through all the border stations during just one summer week (ending August 5).

<u>Station</u>	<u>Autos</u>	<u>Trucks</u>	<u>RVs</u>	<u>Buses</u>	<u>Inter- ceptions</u>	<u>Serious Pests</u>
Alturas	5,587	96	205	0	29	3
Benton	2,958	389	241	30	65	4
Blythe	65,196	23,601	1,807	355	685	25
Dorris	9,772	4,454	2,015	46	104	26
Hornbrook	44,887	5,381	2,905	154	1,138	17
Long Valley	31,431	1,685	738	14	117	8
Meyers	111,406	311	187	9	244	7
Needles	22,615	14,566	645	55	517	16
Redwood	12,586	259	656	10	203	1
Smith River	24,885	313	3,986	52	562	12
Topaz	16,360	1,077	237	27	75	1
Truckee	110,903	6,520	952	35	491	16
Tulelake	5,183	104	241	20	115	0
Vidal	6,036	1,111	67	0	30	12
Winters	25,691	3,989	1,181	41	162	10
Woodfords	7,857	97	38	2	24	1
Yermo	71,392	5,378	1,233	144	643	643

The following graphs indicate the amount of traffic and interceptions through the border stations over a ten-year period:

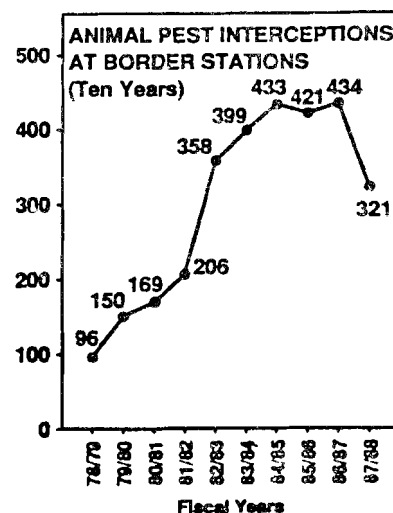
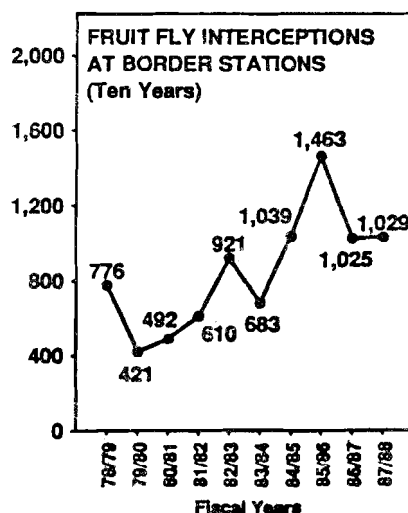
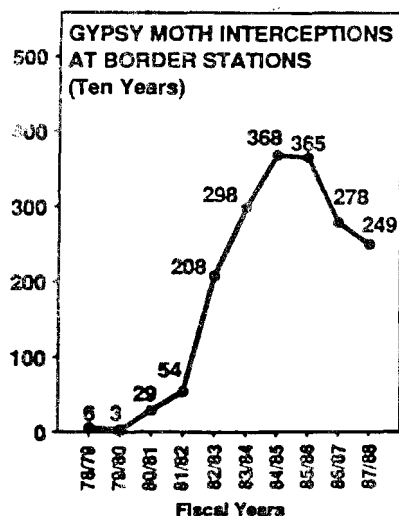


TEN-YEAR TRENDS

Pest Interceptions
increased 2.6 X

Quarantine Rejections
increased 3.6 X

Traffic
increased 2.4 X



Plant Pathology Highlights

CLUBROOT OF CRUCIFERS

by T.E. Tidwell

Clubroot disease of crucifers was found for the first time in the County of Santa Clara in June of this year. The disease was found in a field of Napa cabbage (*Brassica rapa*) near San Martin, by County Biologist Kevin O'Day and by David Sturla, who is associated with a Santa Clara farming organization.

The fungus, *Plasmodiophora brassicae*, enters roots of susceptible crucifer plants through root hairs and wounds. The fungus causes hypertrophy and hyperplasia of the root tissue, resulting in roots with distorted shapes. The overall effect on the root system varies with the host. In some crucifers, such as cabbage and broccoli, spindle-shaped roots are common (Figure 1). The roots of radishes, turnips, and rutabagas tend to become more "clubbed." In mustard the disease symptoms can vary from nearly globose "knobs" to cylindrical or spindle-shaped roots. Since passage of water and nutrients through the malformed roots is restricted, stunting and wilting of the above ground portion of the plant may follow. These above ground symptoms may be slow and subtle, or they may be sudden and pronounced, depending on environmental conditions, age of host, and other factors. In earlier stages of the disease, plants may partially wilt during the day, then recover their turgidity at night. As the disease progresses, however, the enlarged roots begin to decay, and permanent wilting may eventually occur.

In the early stages of infection, the clubroots are gray to yellow, later becoming darkened. In the latter stages, the diseased roots may crack open, become soft, and finally just disintegrate into foul-smelling masses of rotting tissue after being invaded by secondary organisms. Within the clubroots, the fungus forms resting spores (Figure 2) which are eventually released into the soil when the root tissue decays. These spores can remain viable for many years, even in the absence of susceptible host plants, of which there are many. In addition to the familiar commercially produced cole crops, such as cabbage, broccoli, cauliflower, etc., the fungus can also infect many other crucifer species, including weeds and cultivated ornamentals, such as wallflower and stock. The fungus is easily moved around via infected transplants and infected plant debris, and can also be moved by water, contaminated farm implements and vehicles, as well as by wind blown soil. It has even been known to be transported via manure from livestock which was fed infected plant material.

Since the spores of the fungus germinate poorly (if at all) under alkaline conditions, the traditional method of controlling the disease is to maintain the soil pH above 7.2 through the use of hydrated lime. Unfortunately, this method is not always successful in controlling the disease since, although the pH of the overall soil profile may indeed be alkaline, the soil moisture film immediately around the roots themselves may actually still be acidic due to the carbon dioxide given off by the rootlets. This is particularly true in drier soils in which there may not be sufficient movement of alkaline particles to promptly neutralize the acid in the

micro-environment immediately around the rootlets. A much preferred method, biologically, is to simply prevent the introduction of the fungus into growing areas by restricting the movement of vehicles and implements entering crucifer growing areas unless they have been thoroughly disinfected (if they have been in other crucifer fields). The pathogen is not known to be seed transmitted; however, infected transplants and infested soil adhering to transplants can also introduce the pathogen into fields, hence precautionary steps should be taken to avoid this situation as well.

Clubroot disease has been reported in the following California counties: Contra Costa, Humboldt, Monterey, San Diego, San Joaquin, San Mateo, Santa Cruz, and now in Santa Clara County.

References:

Eddins, A. H. 1952. Diseases, Deficiencies and Injuries of Cabbage and Other Crucifers in Florida. University of Florida, Gainesville. 63 pp.

Rowe, R.C. 1980. Evaluation of Radish Cultivars for Resistance to Clubroot (*Plasmodiophora brassicae*) Race 6 for Midwestern United States. *Plant Disease* 64:462-464.

Walker, J. C. 1948. Diseases of Cabbage and Related Plants. USDA, Washington. 38 pp.

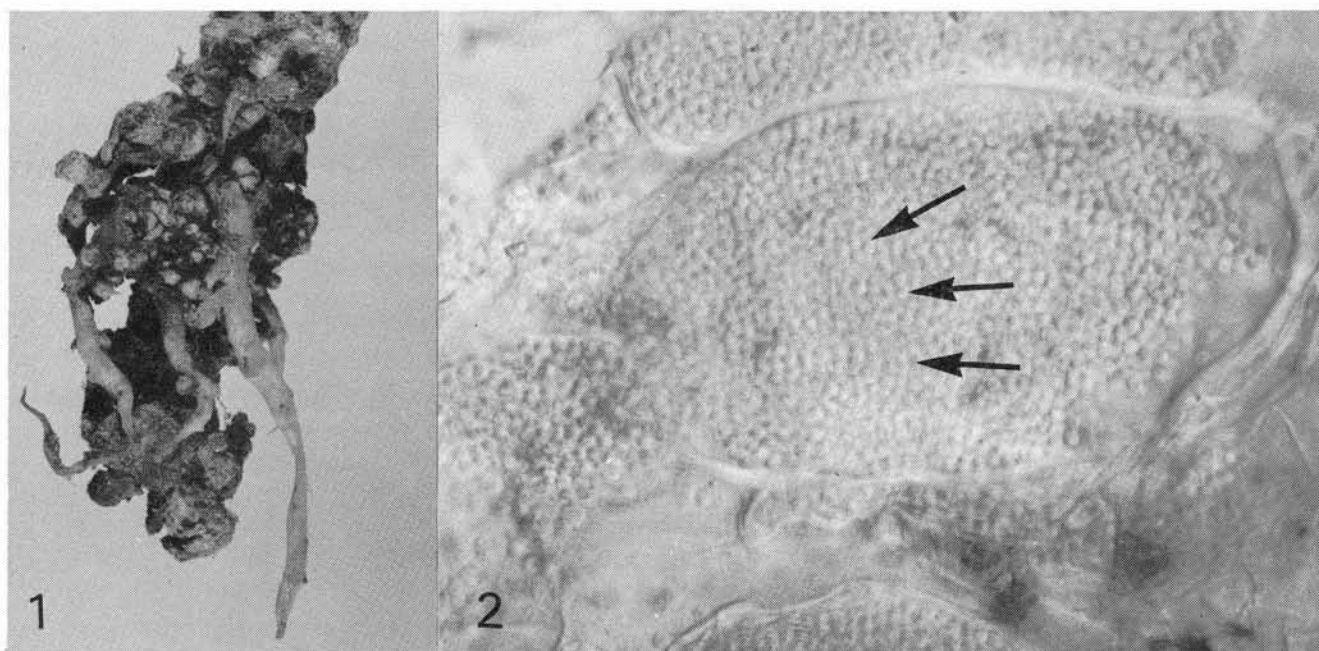


Fig. 1: Broccoli roots having spindle-shaped clubs and general malformation symptoms caused by the clubroot fungus *Plasmodiophora brassicae*. Fig. 2: Resting spores (arrows) of the clubroot fungus *Plasmodiophora brassicae*, in broccoli root tissue. [Photos by Tom Matsumoto and David Supkoff, CDFA].

Botany Highlights

NEW COUNTY RECORDS

HYDRILLA, *Hydrilla verticillata* -(A)- A new major infestation of this serious aquatic weed was found early this summer. The following report outlines the find.

Hydrilla was found June 20, 1989, in Eastman Reservoir, Madera County. This is the first time hydrilla has been detected in Madera County. CDFA Detection Biologist Denis Griffin and Madera County Department of Agriculture Inspector III Bruce Rohn found it during a detection survey for hydrilla.

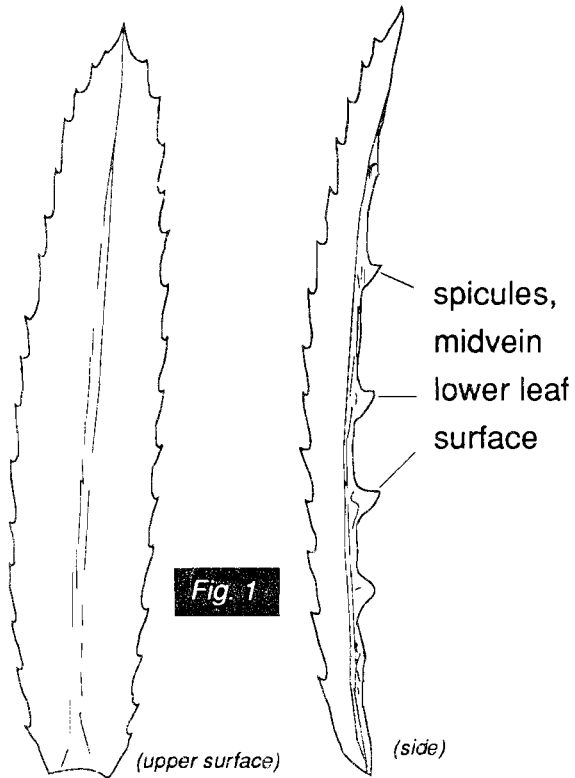
Eastman Reservoir is approximately 1,800 acres in size. The hydrilla covers about five acres on the northeastern shore. The reservoir is approximately 16 miles east of Chowchilla and serves the Chowchilla Irrigation District.

In response, personnel from CDFA Pest Detection/Emergency Projects, Control and Eradication, and Madera and Mariposa County Departments of Agriculture conducted a delimiting survey. As a result of the survey, hydrilla was also found along a stretch of the main and west forks of the Chowchilla River into Mariposa County. The first find was by Denis Griffin in a pothole off the main river channel northeast of Eastman Lake. Later Tom Palmer found an infestation on July 10 on the west fork of the river about two miles south of the town of Bootjack. Subsequent finds by Acosta, Patrick, Morris, O'Connell and Eng indicate that the entire west fork of the river is infested south of Highway 49.

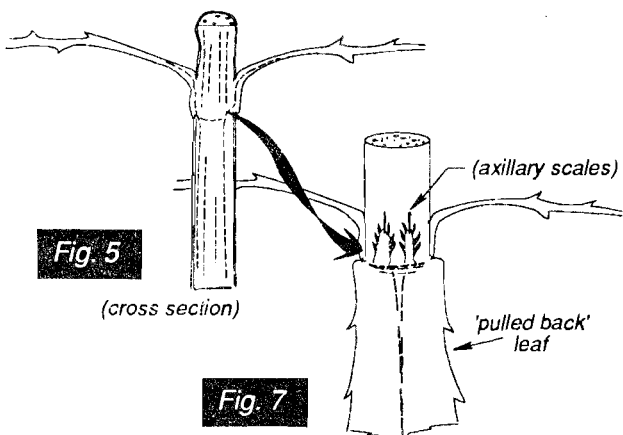
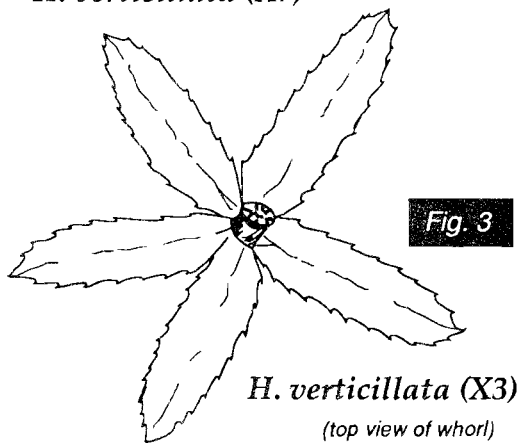
The following characteristics help distinguish between hydrilla, elodea and anacharis:

- | | |
|--|---|
| ● Usually with spicules on midvein of lower leaf surface. [Fig. 1] | ● Without spicules on midvein of lower leaf surface. [Fig. 2] |
| ● Usually scratchy feel to the touch. | ● Soft feel to the touch. |
| ● Typically 5 leaves per whorl (variable, 2 to 8). [Fig. 3] | ● <i>Elodea canadensis</i> and <i>E. nuttallii</i> consistently three leaves per whorl. <i>Egeria densa</i> 4 to 8 leaves per whorl, leaf length varies from 8 to 40mm, but commonly much longer than <i>Elodea</i> species. [Fig. 4] |
| ● In cross section, leaflets arise from whorl at an upward angle. [Fig. 5] | ● In cross-section, leaflets arise from whorl at right angles to stem. [Fig. 6] |
| ● Axillary scales complex, palmated. [Fig. 7] | ● Axillary scales simple, minute, crescent-shaped. [Fig. 8] |

HYDRILLA

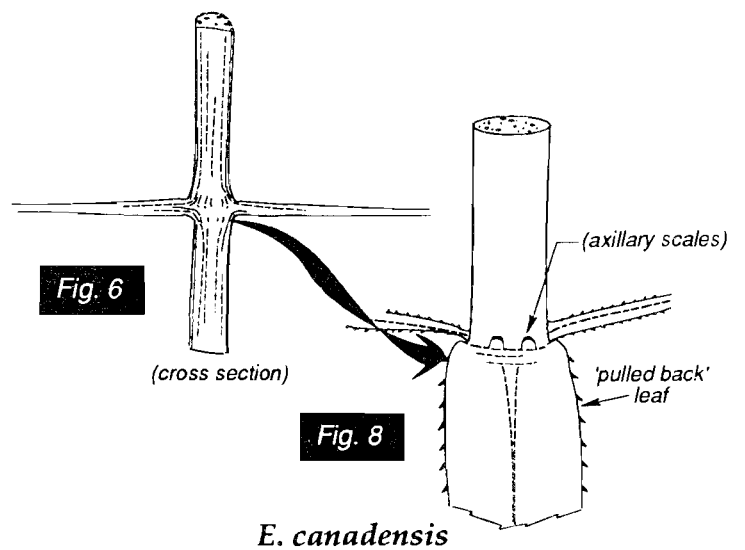
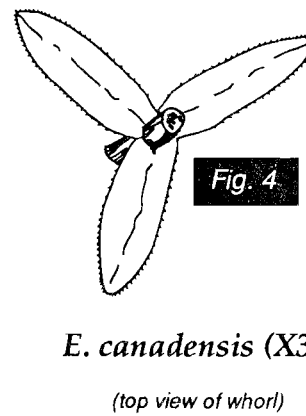
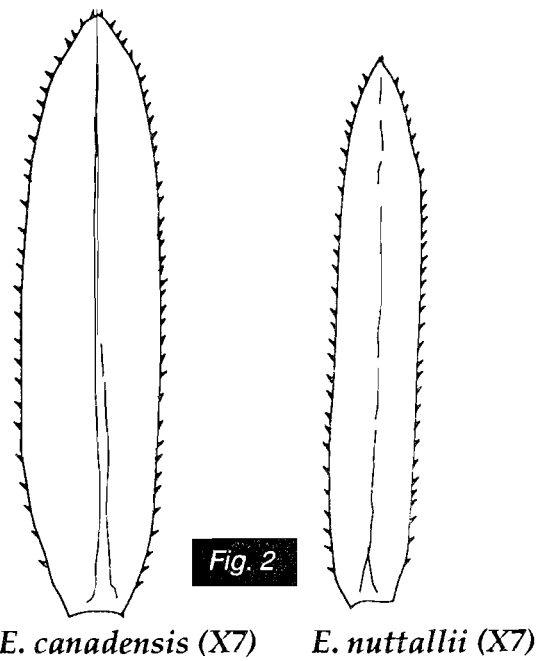


H. verticillata (X7)



H. verticillata

ELODEA

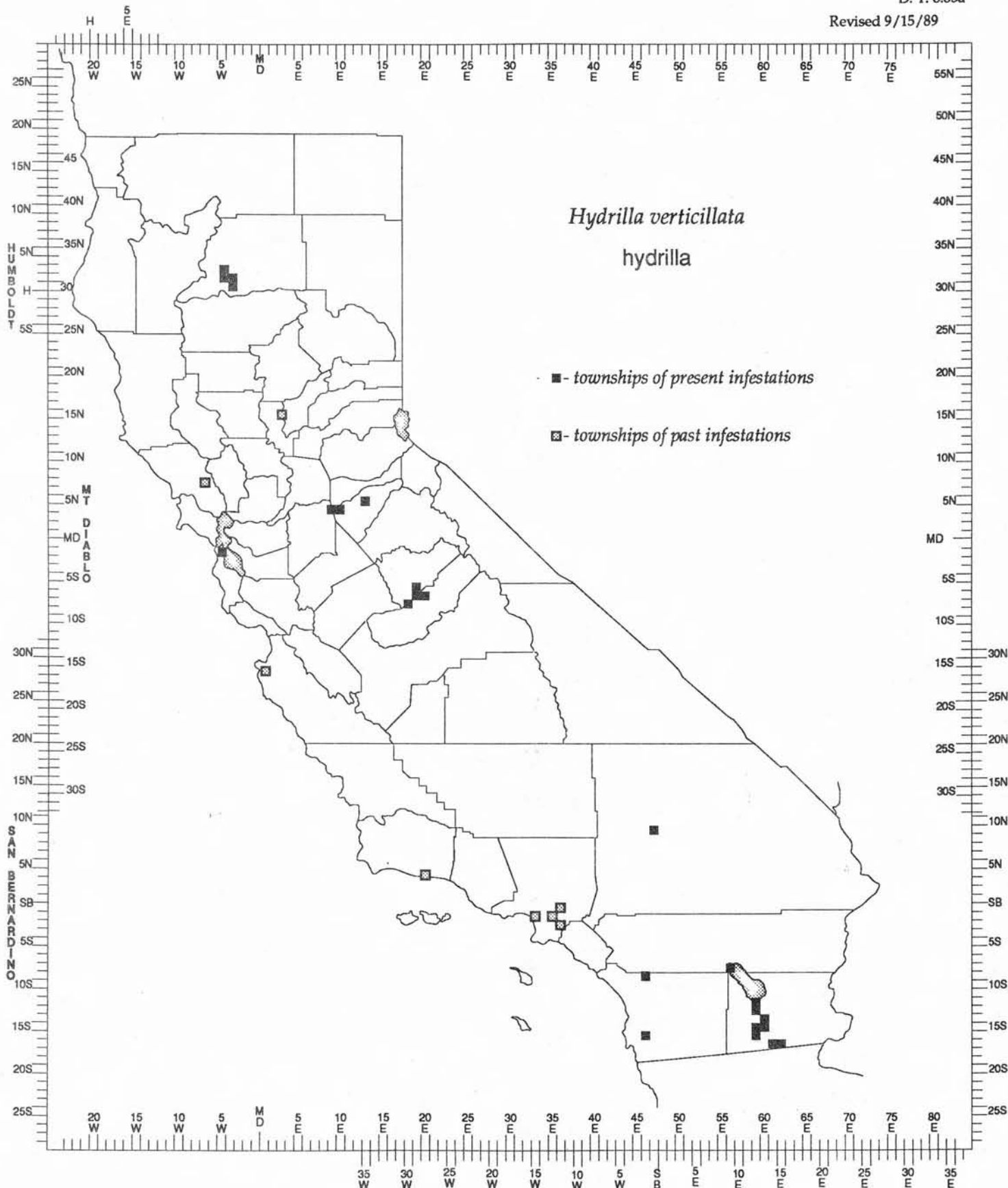


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DIVISION OF PLANT INDUSTRY - ANALYSIS & IDENTIFICATION/BOTANY

DETECTION MANUAL
D. T. 6:85a

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JOINTED GOATGRASS, *Aegilops cylindrica* -(B)- Jointed Goatgrass has been found on Cooks Spring Road, Ladoga, Colusa County. This is a new county record. Craig Thomsen, with the University of California, Department of Agronomy and Range Science at Davis, made the find. The nearest previously known locations are in Siskiyou County. Other infestations are in Santa Barbara County. The map on page 79 shows the overall state distribution.

MUSK THISTLE, *Carduus nutans* -(A)- Musk thistle has been detected in Placer County for the first time. The thistle was found in the median strip of I-80 near Yuba Gap. Placer County Agricultural Weights and Measures Inspector Ken Stark made the find. The nearest previously known locations are east of Emigrant Gap in Nevada County. Other infestations are in the State of Nevada on I-80 from Verdi to Reno. The map on page 80 shows the overall state distribution of this distribution.

DIFFUSE KNAPWEED, *Centaurea diffusa* -(A)- Diffuse knapweed has been detected in Sacramento County for the first time. The knapweed plants were found in the I-5 center divider approximately 0.3 of a mile north of the Highway 70/99 interchange. This is a new county record. CDFA Associate Agricultural Biologist Robin Breckenridge and Inspector Karen Hill made the find. The nearest previously known locations are roadside plants in Colusa County. The map on page 81 shows the current distribution.

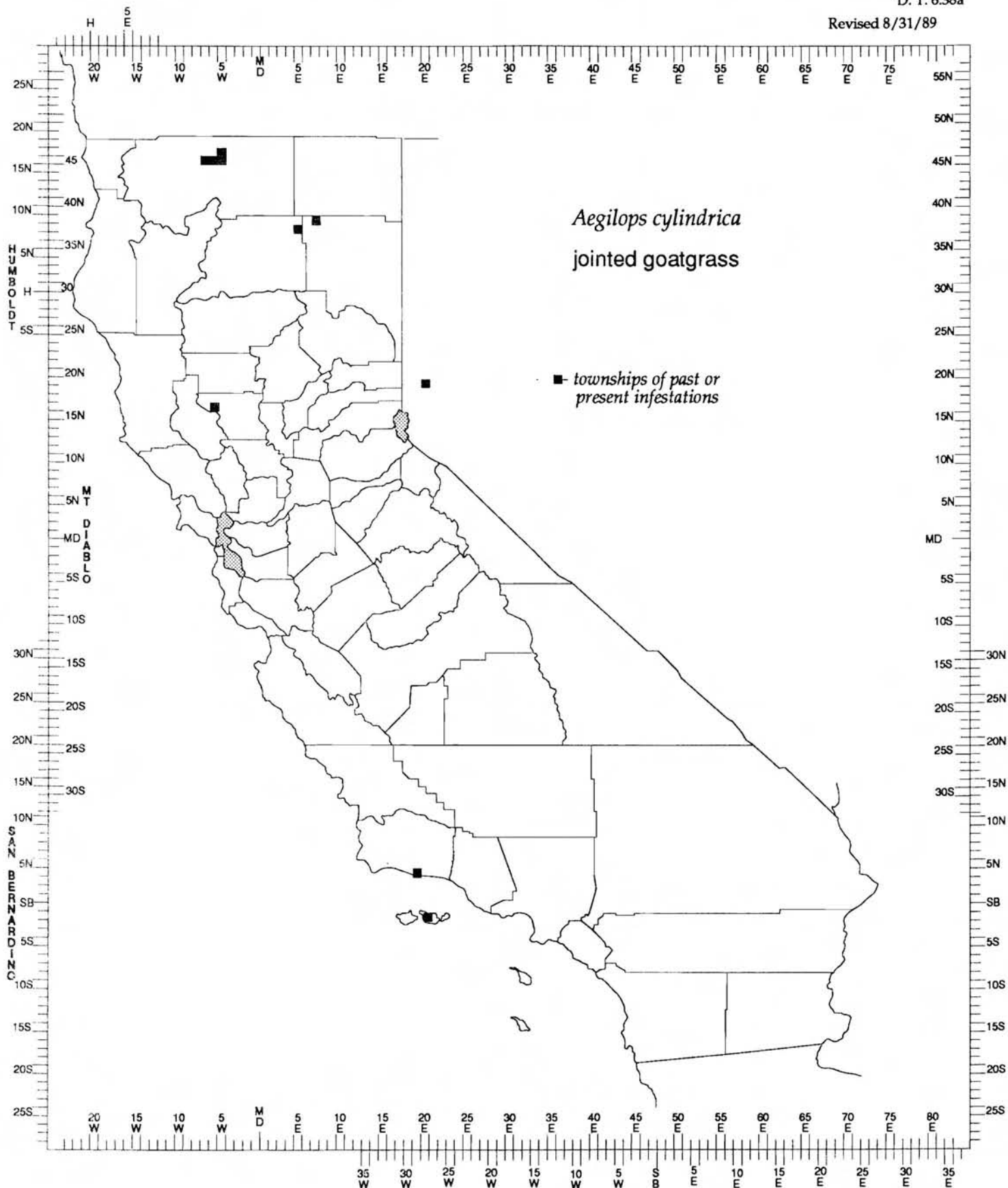
Diffuse knapweed occurs frequently along roads and right-of-ways, where it can become established and then move into adjacent fields and rangelands.

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DETECTION MANUAL
D. T. 6:38a

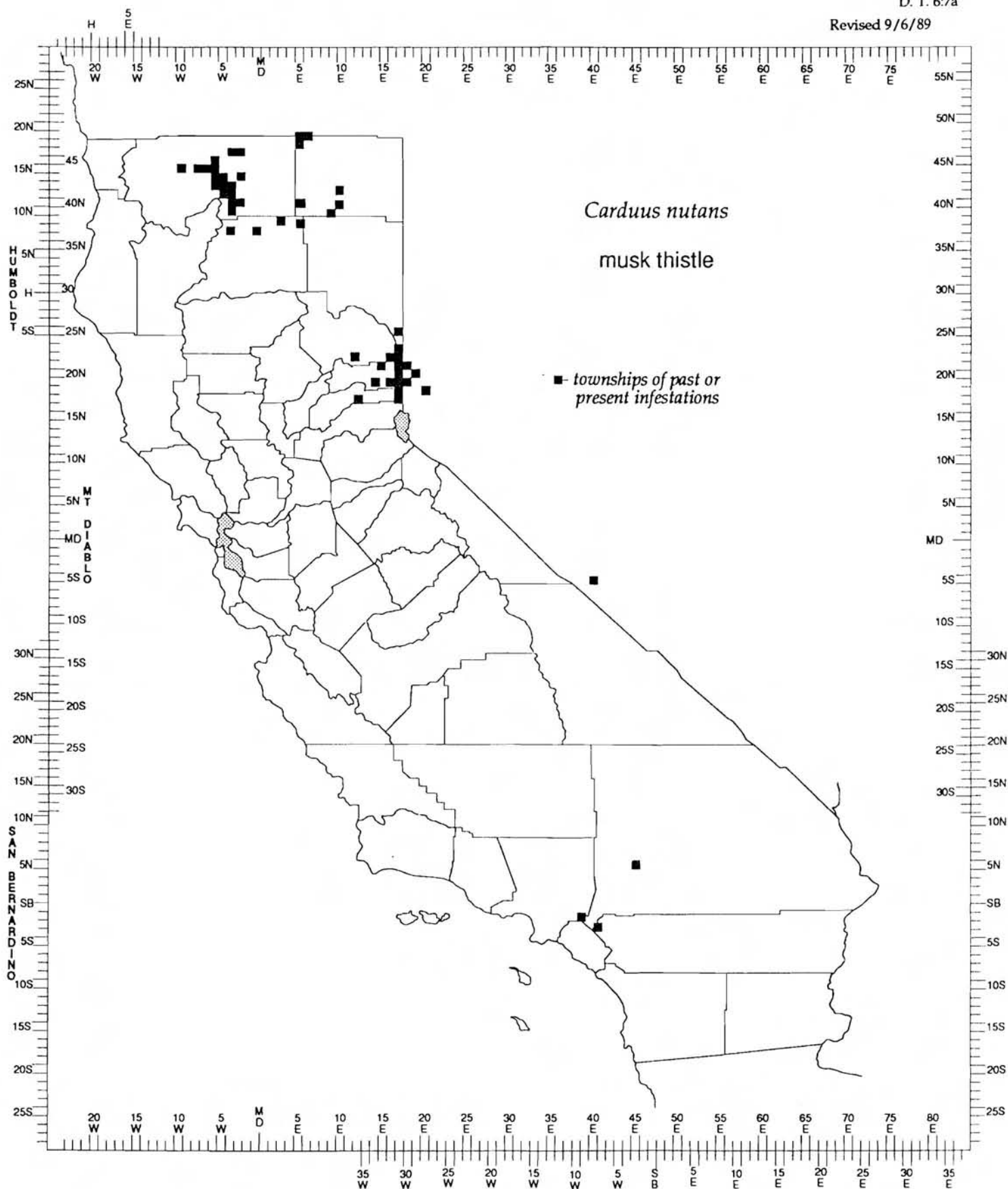
Revised 8/31/89



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DETECTION MANUAL
D. T. 6:7a

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DETECTION MANUAL
D. T. 6:23a

Revised 8/31/89

